International Journal of Manufacturing, Material and Mechanical Engineering Research
Vol.3, No.1, pp.1-9, 2021
Print ISSN: ISSN 2397-7418 (print)
Online ISSN: ISSN 2397-7426(online)

AN ASSESSMENT OF CERAMIC CISTERN TOILETS USAGE IN ONDO STATE NIGERIA

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ABSTRACT: *Sanitary convenience is a necessity for every ideal household that desires healthy lifestyle. The study assessed the usage of the available sanitary waste management alternatives within Ondo State. Survey method was adopted and data collected through questionnaires which was later processed using statistical tools. The response revealed that most people use the ceramic cistern-flush and pour flush toilets for its ease of cleaning and flushing. Unfortunately, the breakdown of public infrastructure such as water supply in parts of Ondo State is a major hindrance in the proper usage of these sanitary fixtures in some household. Hence, other alternatives of faecal waste disposal were adopted.*

KEY WORDS: Cistern, flush, latrine, sanitation, faecal

INTRODUCTION

It is an established fact that inordinate disposal of human waste is considered offensive, outdated, appalling, demeaning and unacceptable in most civilised communities, because it disrupts the environmental order. Adegboye, (2014) Tom (2014) and WHO, (2017) lamented the unhygienic habit of open urination and defecation by members of the public in parts of Nigeria. Baltazar and Solon (1989) butressed that, children living in households without toilets are twice as likely to get diarrhea as those with toilets. In the past toilets used to be a place where most people do not want to stay for too long because of the repulsive odour they give. However, with the improved sanitary convenience provided by the Ceramic sanitary ware industry, toilets are becoming more attractive and eco- friendly. Chris, (2010), David, (2011) and identified the various kinds of sanitary ware. John (1995) recommended that it is crucial that every ideal household should have improved sanitary conveniences for people living, visiting or working therein.

Man is an intelligent being whose sense of choice cannot be overemphasised when it comes to where to relief himself. Fajuyigbe, (2011) and Cute, (2012) opined that the cost of maintaining an ideal sanitary disposal system can be so expensive and beyond what some ordinary citizens can afford; when one considers the increasing population resulting from migration, shortage of pipe borne water supply and the state of unemployment. This implies that only the rich few have access to satisfactory sanitary disposal systems in some large cities. As a result, most average income earners who cannot afford hygienic ceramic sanitary ware in the market; have to put-up with self-

built latrines or other alternatives. This research, examines the usage of ceramic cistern-flush toilets in comparison to other human faecal management alternatives in Ondo State, Nigeria.

LITERATURE REVIEW

Open defecation, though offensive, outdated, degrading, demeaning and not acceptable yet it has lived with us right from the pre-historic times. Different designs and innovations of sanitary facilities have been developed through the ages with different materials such as wood, metals, plastics, biodegradables and ceramics; yet some people are so accustomed to open defecation that even when they can afford the modern day toilet facilities they still prefer the use of other latrines. Vinny, (2006) and Venkat, (2016), mention the range of ceramic sanitary ware and factors consumers consider before purchasing sanitary ware as budget, price, size, design, colour, functionality, availability, durability, resistance to impurity, brand and place of origin.

Type of sanitary facilities

Pit latrine

Pit latrines are the most common sanitation facility used in Nigeria (Ivbijaro, Akintola and Okechukwu, 2006). A typical pit latrine is composed of a pit or a squatting plate, foundation and a superstructure. The pit is simply a hole in the ground into which excreta fall. When the pit is filled to within 1 meter of the surface, the superstructure and squatting plate are removed and the pit filled up with soil and a new pit dug nearby. They are usually stinking, encouraging the breeding of flies and mosquitoes. Plate 2.1 is a sample of a backyard pit latrine.

Plate 2.1: A typical pit latrine
Source: Researcher's field work, 2016

Improvement has provided other designs for pit latrines that are odourless and have minimal fly and mosquito nuisance. Ventilated Improved pit latrines are hygienic, low-cost, and a more acceptable form of sanitation that has only minimal requirements for user care and municipal involvement. The pit is slightly offset to make room for an external vent pipe. It is advisable that the vent pipe be located on the sunny side of the latrine superstructure to heat it up and thus augment the updraft. The air inside the vent pipe will be aspirated and any odours emanating from

the pit contents are also expelled via the vent pipe, leaving the superstructure odour free. It further indicates that pit ventilation may have an important role in reducing fly and mosquitoes from entering and laying eggs if the vent pipe is covered by a gauze screen.

Bucket latrine

Bucket latrine system was widely used in Nigeria in the 1960s and early 1970s. This was initiated by the colonial masters as recorded by the legendary Nigerian musician Late Fela Anikulapo Kuti. It consists of a squatting plate made of hard wood and a metal bucket located in a small compartment immediately below the squatting plate. Excreta are deposited into the bucket, which is periodically emptied by the night-soil men into a larger collection bucket that when full is carried to a trenching ground for burial. John, DeAnne, Charles and Mara D.Duncan (1982) describe bucket latrine as an extremely poor form of sanitation, which often spread harmful diseases through its unhygienic, insect attracting offensive smelly surrounded it emits. The collection and disposal by the night soil men called '*Agbepo*' in Yoruba is usually disgusting because the buckets are manually carried and transported long distance to the point of disposal. These type of toilets have almost gone into extinction but their structures can still be seen in the old colonial staff quarters. An example of such latrine can be seen in plate 2.2 below

Plate 2.2: A dilapidated bucket latrine
Source: Researcher's field work, 2017

Pour flush toilets

These type of toilets have water seals beneath the squatting plate or pedestal seat. This style of toilet is of two types; the direct discharge and the offset pit. They can be made of different materials, ceramics inclusive. The pour flush toilet is a modification of the pit latrine in which the squatting plate is provided with a simple water seal. Becky, (2012) stresses that approximately 1 to 2 liters of water is poured in with the hand to flush the excreta into the pit. This type of toilet is often used with wet pits since the water seal prevents odour development and mosquito breeding. It is especially suitable where water is used for anal cleansing, as shown in Plate 2.3.

The offset pit is popular in Southeast Asia, India and some part of Latin America. It is used in combination with a completely offset pit. The pour flush bowl is connected to a short length pipe that discharges into an adjacent pit, making the digestion of excreta proceeds more rapid in wet than in dry pits. In some villages pour flush toilet may be installed inside the house since it is free from both odour, flies and mosquitos nuisance; it therefore obviates the need for a separate external superstructure, and it can thus meet social aspirations for an 'inside' toilet at low cost. Wherever space permits, two pits could be built. When the first pit is full, the pour flush unit can be connected to the second pit. When the second pit is nearly full, the first one can be emptied and the toilet again connected to it.

Plate 2.3: Squat pour flush toilet
Source: Researcher's field work

Conventional cistern-flush toilet

This style of toilet as described by Philip, (1986) and Harrison and Lynch, (2004) is basically a water-seal squatting plate or pedestal unit in which excreta are deposited and then flushed away by 10 to 20 litres of clean, potable water that have been stored in an adjacent cistern which is connected to the household water supply.

The Ceramic cistern is provided with a float valve, so that it automatically refills to the correct volume in readiness for the next flush (Munroe, 2012). The excreta and flush-water are discharged together into an underground septic tank or soak-away. All over the world people spend a lot of money on 'designer' toilets so as to have somewhere trendy to relieve themselves. These facilities are all roughly of the same size and often made comfortable. Very young children can even have an extra seat put on top of the toilet seat to help them get used to sitting on the toilet. Plate 2.4 is on image of a conventional ceramic cistern-flush toilet.

Plate 2.4 Conventional cistern-flush toilet *Source: Researcher's field work*

METHODOLOGY

Survey approach was adopted for this study because it provided a quantitative or numeric description of trends, attitudes or opinions of a population by studying a sample of that population. This process included cross-sectional and longitudinal studies using questionnaire for data collection. The population for this research included respondents within Ondo state, Nigeria. Questionnaire was designed and administered for respondents within the study area. Likert scale model ranged in order 5 to 1 was adopted in the questionnaire in order to elicit information. In this study, the sample frame adopted was the entire population of Ondo State. Hence, an estimated population of 3,895,367 of the National Bureau of Statistics was considered. The sample size was calculated using the internet survey system software calculator. The confidence level was 95%, Confidence interval 5% and sample size 188. A simple random sampling technique was employed to select respondents within the study area. Argyrous, (2011) acknowledged that it has been established through various studies that returned questionnaires are always lower than the number distributed. Therefore, extra questionnaires was added in order to ensure that returned questionnaires falls within the recommended number. Two hundred (200) questionnaires were circulated to respondents. Eleven (11) respondents returned blank questionnaires and one (1) gave multiple answers so it was annulled. Consequently, one hundred (188) questionnaires were considered. The result of this field study was analysed using (IBM SPSS 21version 2015).

RESULTS AND DISCUSSION

The respondents were users of sanitary facilities in the study area. The gender distribution is demonstrated in table 4.1 showing that the female gender population of 58% formed the majority of respondents.

Table 4.1: Gender distribution of respondents

Gender	Frequency	Percent (%)
Female	109	58.0
Male	79	42.0
Total	188	100

Source: Author's field work, 2017

The result on Table 4.2, showing the age distribution of respondents attest that the use of sanitary facility cut across all ages. The ages of most respondents range from 21 to 30.

Table 4.2: Age distribution of respondents

Ages	Frequency	Percent (%)
< 21	7	4.0
21 – 30	70	37.0
31 – 40	58	31.0
40 <	53	28.0
Total	188	100

Source: Author's field work, 2017

Table 4.3, reveals that 34% majority possess ordinary diploma or its equivalent (OND/NCE). It also shows that the usage sanitary facilities has no bias based on educational status; as most of the respondents were literate. This suggests that all the respondents use flush toilets regardless of their educational stature.

Table 4.3: Academic Status of Respondents

Academic Qualification	Frequency	Percent (%)
Masters	11	6. 0
Bachelors	34	18.0
HND	32	17.0
OND/NCE	64	34.0
WASC	32	17.0
No formal Education	15	8.0
Total	188	100

Source: Author's field work, 2017

Professional status of respondents

Analysis was also conducted on the professional status of respondents. The results as displayed on Table 4.4 shows that 50% were engaged in private practices, that is self-employed.

Table 4.4: Professional status respondents

Official Designation	Frequency	Percent (%)
Civil Service	53	28.0
Private Practice	94	50.0
Student	19	10.0
Unemployed	22	12.0
Total	188	100.0

Source: Author's Field Work, 2017

Use of conventional cistern-flush toilets in comparison with other alternatives

Analysis carried out to assess the usage of toilets in the study area as displayed in Table 4.5 ranked cistern-flush toilet as the first with 91% responds attesting to the fact that it was most used. The mean score of the ceramic sanitary toilet usage was 4.9 and relative importance index of 0.98.
The result on variable two gave a majority 38% of responds that use pour flush toilets. On the average 3.5 was gotten and 0.71 relative importance index. This ranked pour flush toilet as the second most used toilet.

The outcome from field survey ranked Pit latrine as the third most used toilet, with a respond of 31% acknowledging its usage. Hence providing opinion mean score of 3.2 and relative importance index of 0.63. The implication was that the usage of pit latrines were neutral. Available result showed that 26% respondents used open defecation occasionally outside their home ranking it the forth position. The average score was 2.9., while the relative importance index was 0.58 which makes it neural. This analysis further proves that some people who have toilets sometimes indulge in open defecation outside their residents, because of the insufficient and poorly managed public toilets.

Finally, from table 4.12., 76% respondents do not use bucket latrine. The average score was 1.5 and relative importance index 0.29. This implies that bucket latrine is less used. Further investigation revealed that users of bucket latrine, use 30 litres plastic paint buckets to collect faeces instead of the usual metal buckets and discharge the waste into a pit very early the next morning.

Table 4.12: Use of toilets in Ondo state %

Type of facility	MU	U	N	L U	NU	Mean	RII
Cistern flush toilet	91	6	-	1	2	4.9	0.98
Pour flush toilet	25	38	12	8	17	3.5	0.71
Bucket latrine	1	7	4	12	76	1.5	0.29
Pit Latrine	20	31	10	18	21	3.2	0.63
Open Defecation	13	26	16	21	2	2.9	0.58

Source: Author's field work, 2017
Keys:

MU = Most Used U = Used N = Neutral LU = Less Used NU = Not Used

CONCLUSION

Observation taken from the analysis in this study ranked cistern-flush and pour-flush toilets as the most used toilets in the study area having RII equivalent of 0.98 and 0.71 respectively. It was also observed that the government does not provide pipe borne water to residents for general use. Hence, it was difficult for some people to appropriately sanitize their toilets. The fact that not every household can afford to sink a bore-hole, people result to other means of getting water to manually flush their toilets such as streams and wells.

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